

Simon Peyton-Jones Interview

What is Computer Science?

So Computer Science is the study of computer systems and more abstractly computation. It is how we think about the world in a computational way. Just as I think kids learn about physics because part of their world is governed by physical laws. So increasingly our world is governed by digital laws. I think it is important that every child knows something about how that world works and the laws that govern it.

What is CAS – Computing At School?

The Computing At School working group, to give it its original name is just a bunch of concerned individuals. It is very much a grass roots organisation. It started in 2008. There were just four of us in the room and we were more or less thinking what everybody seemed to believe at the time there was something wrong with ICT education in Britain but everybody kind of felt powerless because the educational system had such a lot of inertia.

CAS is simply an attempt to bring together all the people who think there is something wrong and we should do something together to fix it and try to do something to fix it.

The first thing we had to do was to figure out, well, what is wrong, what is, as it were, a diagnosis not of the symptoms but of the disease. So in the end we figured out that what it was – that over time and for quite well meaning reasons computer science education had shifted or computing education in Britain had shifted from understanding quite a bit about programming, quite a bit about understanding how computers work.

This was back in the late 1980s the era of the BBC Micro. Then for the best of reasons we had slipped into increasing focus on applications and at the same time PCs came along so people were less hands on at the hardware level so that we spent more and more of our time just focusing on how to apply and use computers, which is of course very important, but we had somehow lost completely the idea about studying computation itself or how computers work; and that as it were decoupled the applied end from the under-lying discipline.

So what CAS is fundamentally about is introducing Computer Science as a discipline at school level in the same sense that Maths and Physics are disciplines; that is they have an underlying body of knowledge with sets of principles and fundamentals that last for years. A Computer Science curriculum at school should be recognisable 10 years ago and will be recognisable in 10 years' time. It is specifically not technology- focused it is to equip you for life if you like. That is the mission.

What have been the 'wins' CAS has made this year?

One of the huge wins for CAS is that it is very much a bottom-up organisation and that people just roll up their sleeves and get on with it; and that is very liberating because instead of being sort of top down and you have to wait for somebody to tell you what to do, then you know, Alan Donohoe runs a 'Hack to the Future' day and it's an enormous success. Geneviève is running Hack days in Brighton; it's all just individuals doing things. I was at Paul Clarke's session about YOUSRC, he single-handedly has built a system for teaching programming to school kids that is now being used by thousands of school kids around the country; just amazing. So, it's that sort of grass roots sense as CAS includes not just teachers but IT professionals, of which Paul is one, school governors, members of professional bodies, members of exam awarding bodies are also members. CAS is a very broad organisation and that gave us a lot of credibility. We then joined up with the BCS who are our umbrella professional body and together we have started to have quite a bit of impact at national level but that impact comes entirely from the credibility we have coming from this grass roots connection. People believe us because they know that thousands of school teachers or over a thousand school teachers are involved in CAS. That makes a huge difference.

What has happened in the last three years? We have been making the case at national level for computer science to be considered as a school subject that every child should have access to, not just as a specialist 'geek' subject but from primary school onwards. But it was not until Eric Schmidt (Executive Chairman of Google) made his speech in late August (2011) that the door was really, as it were, kicked wide open. That brought it onto the national radar in a way that we had not been able to do up to that point. But we had been poking quite a lot so then it was a great surprise and thrill actually when Michael Gove, in his speech at BETT, explicitly articulated the case for computer science as a discipline at school. That is the bit of his speech that I love most of all. And since then there has been a lot of media coverage. All the awarding bodies who we had already been talking to have come out with GCSEs in computer science, which is fantastic because without a GCSE you just cannot teach the subject. People listening to this may not know that three years ago (2009) there were NO GCSEs in computing at all. None – Zero. If there are zero you just cannot teach it. It is as simple as that. There were a dozen in ICT, so this was an imbalance. It is not that ICT is all bad it is just that we got out of whack. We just need to rebalance the situation and having all these new GCSEs is just fantastic.

Why has CAS been so successful?

The 'bottom up-ness' is its strength. I sometimes feel as if I have to keep reminding everybody, particularly people who are new to CAS that there is no central organisation, with a head office and three or four members of staff who are busy doing stuff. CAS has consisted almost 100% of volunteers, there has been a lot of support from BCS and we do actually employ Simon Humphreys as a co-ordinator, four days a week. But that is incredibly small for a national movement. 99% of the energy in CAS comes from its members. It is like an organisation that is

all periphery and no centre and so the little bits of stuff that we do at the centre, that I do as Chair, are not telling people what to do. Rather, they are saying, based on all the stuff that I am getting from you now I can go with a certain amount of credibility to Ofsted, to the Department for Education, to awarding bodies and say 'look, this is what the country needs' and we have the credibility to back that.

Why should people join CAS?

CAS is changing the world. Unusually for an organisation of volunteers we have caught the wave and we are in a position to make a decisive and lasting change in our nation's educational system. That chance does not come by very often. This is your chance to become part of the party. Just join, anybody can join and then just roll up your sleeves and get on with it because that is just what everybody else in CAS is doing.